

order, but points much more precisely to the irritable and contractile tissue of the lowest animals, which possess neither muscles nor nerves.

9. As it is, on the one hand, most improbable that these conditions should obtain in the tissue of the filaments of *Centaurea* as a solitary instance, so, on the other, it is much more credible that similar properties (motory phenomena consequent on irritation) prevail throughout the vegetable kingdom. That this is so, is exemplified in all those movements which have a recognized object, as those of the young parts of all plants towards the light, and in the curved motions of such parts induced by mechanical and electrical contact; and the conclusion is inevitable, that irritability and contractility, or, in other words, the faculty of undergoing changes in form or outline in response to external excitation, are not restricted to the animal kingdom, but, like assimilation, respiration, the distribution of nutritive juices, development, &c., are the vital endowments of the cell simply as such, and are manifested in plant-tissue only exceptionally with less distinct energy by reason of a simpler organization and weaker vital power.

10. Teleologically considered, the irritability of filaments is subservient to the production of movements in the Cynarææ and the florets of probably all the other Compositæ, in connexion with dichogamic fertilization, as the frequency of bastard forms in *Cirsium* and *Hieracium* indicates. In this process insects constitute the principal agents, causing by their contact the contraction of the stamens and the consequent extrusion of pollen from the anthers, and then carrying the pollen so discharged to other florets, the stigmas of which are (unlike the organ of the floret, with its highly irritable stamens, which has furnished the fertilizing powder) in a condition to receive it.

XXII.—On the Japanese Species of Siphonalia, a proposed new Genus of Gasteropodous Mollusca. By ARTHUR ADAMS, F.L.S. &c.

Genus SIPHONALIA, A. Adams.

Testa ovato-fusififormis, plerumque variegata, non epidermide induta; anfractu ultimo ventricoso, plerumque nodoso-plicato. Apertura antice in canalem curvum recurvatum desinens.

Most of the typical species comprising this group have been described by Lovell Reeve in his Monograph of *Buccinum*. They are, *B. cassidariæforme*, Rve., *B. lineatum*, Kien., *B. signum*, Rve., *B. modificatum*, Rve., *B. spadiceum*, Rve., *B. fusoides*, Rve., *B. hinnulus*, Ad. & Rve. Their operculum, however, is fusoid,

and their shells more nearly resemble those of *Neptunea* than of *Buccinum*. They appear to be principally from China and Southern Japan, while the species of *Neptunea* are chiefly northern shells, and are numerous in the northern parts of Japan and Manchuria. The species of *Siphonalia* are commonly variegated and destitute of epidermis, and are thin ventricose shells; while the species of *Cantharus* and *Cuma*, which somewhat resemble them in form, are dense solid shells, and are covered with a thick brown epidermis.

1. *Siphonalia cassidariæformis*, Reeve.

*Buccinum cassidariæforme*, Rve. Conch. Icon. sp. 11.

Hab. O-Sima; Simoda.

2. *Siphonalia signum*, Reeve.

*Buccinum signum*, Rve. Conch. Icon. sp. 6.

Hab. O-Sima; Hakodadi.

3. *Siphonalia trochulus*, Reeve.

*Buccinum trochulus*, Rve. Conch. Icon. sp. 7.

Hab. O-Sima.

4. *Siphonalia fusoides*, Reeve.

*Buccinum fusoides*, Rve. Conch. Icon. sp. 9.

Hab. Satanomosaki; Tsu-Sima.

5. *Siphonalia fuscolineata*, Pease.

*Neptunea fuscolineata*, Pease, Proc. Zool. Soc. 1860.

Hab. Mino-Sima.

6. *Siphonalia modificata*, Reeve.

*Buccinum modificatum*, Rve. Conch. Icon. sp. 67.

Hab. Kuro-Sima; 56 fathoms. Fatsijeu; 29 fathoms.

7. *Siphonalia spadicea*, Reeve.

*Buccinum spadiceum*, Rve. Conch. Icon. sp. 64.

Hab. Mino-Sima; 63 fathoms.

8. *Siphonalia hinnulus*, Adams & Reeve.

*Buccinum hinnulus*, Ad. & Rve. Moll. Voy. Sam. pl. 7. f. 10 a, b.

Hab. Tsusaki; 35 fathoms. Tatiyama.

9. *Siphonalia commoda*, A. Adams.

S. testa acuminato-ovata, sordide alba, epidermide tenui fugacea obtecta; spira aperturam vix æquante, conica; anfractibus 7, planis, in medio subangulatis, obsolete nodoso-plicatis, transversim liratis; liris majoribus albidis, minoribus fuscis, alternantibus;

interstitiis longitudinalibus crebre striatis; apertura oblongo-ovata, intus alba; labio lævi, canali aperto, mediocri, reflexo; labro intus lævi, margine crenulato.

*Hab.* Tsaulian.

A very neatly-formed and modest-coloured shell, differing from every species with which I have compared it.

10. *Siphonalia corrugata*, A. Adams.

*S.* testa acuminato-ovata; spira brevi, acuta; anfractibus 6, planis, longitudinaliter rugoso-plicatis, plicis in medio anfractuum nodulosis, transversim liratis; liris rugulosis, griseis cum albidis alternantibus, antice validioribus et distantioribus; anfractu ultimo magno, plicis antice obsoletis; apertura ovata, canali brevi, recurvato; labio lævi, calloso; labro intus lirato, margine albo.

*Hab.* Kino-O-Sima.

A grey species, with transverse white lines alternating with brown ones. It somewhat resembles *S. trochulus*, Reeve; but in that species the whorls are rugosely plicate.

11. *Siphonalia conspersa*, A. Adams.

*S.* testa acuminato-ovata; spira brevi, conica, lutescente, castaneo variegata et rufo-fusco conspersa; anfractibus 6, longitudinaliter plicatis, plicis postice nodulosis, in anfractu ultimo antice obsoletis, transversim liratis, liris validis, æqualibus; apertura ovata; labio lævi, calloso, incrassato, canali brevi, valde recurvo; labro intus sulcato.

*Hab.* Japan. Coll. Cuming.

A very pretty species, resembling in form *S. cassidariaformis*, Reeve, but with very different colouring and sculpture.

12. *Siphonalia concinna*, A. Adams.

*S.* testa ovato-conica; spira elata, quam apertura brevior, fulva, fasciis duabus latis transversis albidis ornata; anfractibus 6, lævibus, in medio angulatis, longitudinaliter plicatis, plicis distantibus, postice nodulosis, in anfractu ultimo obsoletis; anfractu ultimo antice transversim sulcato; apertura ovata; labio lævi, tenui, canali brevi, valde reflexo; labro intus lævi.

*Hab.* Kuro-Sima.

A neatly-painted species, with smooth and nodosely plicate whorls.

13. *Siphonalia ornata*, A. Adams.

*S.* testa ovato-fusiforimi; spira conica, quam apertura brevior, fulva, lineis transversis rubris (in anfractu ultimo septem) ornata; anfractibus 6, planis, serie nodulorum in medio instructis, longitudinaliter striatis, transversim liratis; apertura ovata; labio crasso,

calloso, canali subproducto, ad sinistram inclinato, valde recurvo ; labro intus valde lirato.

*Hab.* Japan. Coll. Cuming.

An elegant lineated species, with a series of conspicuous nodules in the middle of the whorls.

14. *Siphonalia filosa*, A. Adams.

*S.* testa ovato-fusififormi ; spira elata, acuta, aperturam æquante, pallide fulva, lineis transversis filiformibus aurantiacis ornata ; anfractibus 8, convexis, longitudinaliter plicatis, plicis rotundis, vix nodulosis, in anfractu ultimo obsoletis, transversim liratis, liris confertis, æqualibus ; apertura ovata ; labio callo lævi instructo, canali mediocri, ad sinistram inclinato, recurvato ; labro intus lævi.

*Hab.* China Sea ; 14 fathoms. Coll. Cuming.

A slightly plicate subfusiform species, with the whorls adorned with orange thread-like lines.

15. *Siphonalia ligata*, A. Adams.

*S.* testa acuminato-ovata ; spira conica, quam apertura brevior, alba, lineis filiformibus pallide aurantiacis distantibus ornata ; anfractibus 6, planatis, postice angulatis, longitudinaliter subplicatis, transversim valde liratis, liris ad plicas nodulosis, elevatis, distantibus, regularibus ; apertura ovata ; labio tenui, simplici, canali brevi, lato, vix recurvato ; labro postice angulato.

*Hab.* Japan. Coll. Cuming.

A delicate white species, adorned with elevated pale orange transverse lines, and most nearly resembling *S. lineata*, Kiener.

16. *Siphonalia grisea*, A. Adams.

*S.* testa acuminato-ovali, cinerea aut grisea ; anfractibus 6, planis, oblique nodoso-plicatis, transversim valde liratis ; liris æqualibus, planis, interstitiis profunde exaratis ; anfractu ultimo magno, serie nodulorum ad peripheriam instructo ; apertura ovata, canali brevi, aperto, recurvato ; labio vix calloso ; labro intus lirato.

*Hab.* Simidsu.

An ashy-grey species, with a series of nodules in the middle of the last whorl.

17. *Siphonalia colus*, A. Adams.

*S.* testa ovato-fusififormi, pallide fusca ; spira elata, aperturam æquante ; anfractibus 8, convexis, postice excavatis, longitudinaliter obtusim plicatis, plicis rotundis, transversim liratis ; liris confertis, filiformibus, subæqualibus ; apertura ovata, canali elongato, aperto, subrecurvato ; labio lævi ; labro intus sulcato.

*Hab.* Mino-Sima ; 63 fathoms.

An elegant fusiform species, with the whorls finely lirated, and



with the siphonal canal produced anteriorly into a somewhat long recurved beak.

18. *Siphonalia acuminata*, A. Adams.

*S.* testa ovato-fusiformi, pallide fulva aut alba, hic et illic rufo tincta; spira acuminata, quam apertura longiore; anfractibus 9, convexis, postice excavatis, longitudinaliter plicatis, plicis rotundis, regularibus, subconfertis, transversim striatis, in medio anfractuum biliratis, liris ad plicas nodulosis; anfractu ultimo liris 6 instructo; apertura rotundato-ovata, canali subproducto, tortuoso, vix recurvo.

*Hab.* Gotto; 48 fathoms.

A light brown acuminate species, with the whorls nodosely plicate, and with the siphonal canal rather produced and tortuous.

19. *Siphonalia pyramis*, A. Adams.

*S.* testa pyramidato-fusiformi, pallide fusca; spira elata; anfractibus 7, subimbricatis, planis, longitudinaliter plicatis, transversim liratis, liris confertis, æqualibus, ad plicas subnodulosis; apertura ovata, canali brevi, tortuoso, recurvo; labio lævi; labro intus sulcato.

*Hab.* Satanomosaki; 55 fathoms.

A somewhat pyramidal species, with an elevated conical spire, subimbricate whorls, and a short, tortuous siphonal canal.

20. *Siphonalia munda*, A. Adams.

*S.* testa ovato-fusiformi, pallide fulva, hic et illic fusco tincta, maculis subquadratis rufo-fuscis, in serie unica dispositis, in medio anfractuum ornata; spira producta, quam apertura longiore; anfractibus 9, convexis, postice excavatis, longitudinaliter nodoso-plicatis, transversim crebre liratis, liris confertis, regularibus, æqualibus; apertura ovato-oblonga, canali subproducto, tortuoso; labio lævi, simplici.

*Hab.* Kuro-Sima; 35 fathoms.

A neat, fusiform, fulvous species, with a series of subquadrate red-brown blotches in the middle of the whorls.

21. *Siphonalia nodulosa*, A. Adams.

*S.* testa ovato-fusiformi; spira acuminata, aperturam æquante, pallide fusca; anfractibus 7, convexis, postice subexcavatis, longitudinaliter valde plicatis, plicis distantibus, antice et postice obsoletis, transversim liratis, liris confertis, regularibus; apertura ovata; labio lævi, canali mediocri, tortuoso; labro in medio recto, postice rotundato-angulato.

*Hab.* Mino-Sima; 63 fathoms.

A somewhat fusiform species, with strongly nodulous plicate whorls. Colour uniform pale brown.